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APPARATUS FOR APPLYING DRINKING STRAWS

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Apparatus for Applying Drinking Straws

Field of The Invention

The present invention relates to an apparatus for applying drinking straws of the type explained in the preamble ~~of claim 1.~~ to bags

Such an apparatus is known from DE 197 45 855. The known apparatus uses a transfer device in the form of a rotary drum on the periphery of which a drinking straw strip is supplied that consists of still cohering packages of individually packed drinking straws. Furthermore, the drinking straw strip contains adhesive points already applied before, which are covered with a cover strip for the time being. Shortly before being applied to the stand up bag the cover strip is removed from the adhesive points and the drinking straw packages are isolated, preferably cut, so that a respective drinking straw can then be adhesively applied by the roller, supported by a press-on finger, to each bag. The known apparatus is designed for applying drinking straws to stand up bags conveyed in an upright manner on a conveyor belt, the transfer means enclosing a right angle with the conveyor surface.

Background of The Invention

EP 149 076 B1 describes a further apparatus for applying drinking straws which is designed for applying drinking straws to lying bags. The transfer device for the drinking straws extends here in parallel with the conveying surface on which the bags are located.

Stand up bags, however, have no parallel side surfaces but consist of two rectangular film pieces which are secured along their longitudinal edges one on top of the other and which in the area of their lower transverse edges have an inserted or molded-on stand up bag and in the area of their upper transverse edges are indirectly welded one on top of the other, resulting in a substantially triangular longitudinal section. Both in the case of an upright transportation and a lying transportation the attachment surfaces on the bag are thus not in parallel with the conveying surface and thus also not in parallel with the

transfer device for the drinking straws. Normally, this is not objectionable, as becomes also apparent from the well-functioning devices of the prior art.

Summary of The Invention

The invention, however, has found out that the handling speeds in ~~said~~ the vertical or parallel arrangement of the transfer device relative to the conveying surface can still be optimized.

It is thus the object of the present invention to improve an apparatus for applying drinking straws to stand up bags in such a manner that their conveying speed is increased.

Said object is achieved by the features indicated in claim 1.

Thanks to the design according to the invention the movement path of the drinking straws can be shortened and the drinking straws can be moved in a parallel movement without any angular change from the transfer device to the bag. Although the increase in speed achieved thereby is within the range of fractions of seconds, even such a small increase in speed effects an economic result in a mass product such as a stand up bag and with the high throughputs achieved by modern bag filling and packaging systems.

Brief Description of The Drawings

Advantageous developments of the invention can be gathered from the sub-claims.

An embodiment of the present invention shall now be explained with reference to the drawings, in which:

Fig. 1 is a schematic side view of an apparatus according to the invention; and

Fig. 2 is a schematic view showing details of the apparatus according to Fig. 1.

Detailed Description of the preferred Embodiment

Figs. 1 and 2 shows an apparatus 1 for applying drinking straws 2 to a receiving surface 3a of stand up bags 3. The stand up bags are transported in a lying position on a horizontal conveyor belt 4 in a direction perpendicular to the illustration in Fig. 1, the upper side of the horizontal conveyor 4 forming a substantially horizontal conveyor surface 4a.

The apparatus 1 contains a transfer means 5 which comprises a transfer drum 6 which is rotatably ~~rotatingly~~ driven by a motor 7 about a rotational axis 6a. The transfer drum 6 is provided on its periphery with recesses 8 which can each receive one of the drinking straws 2. The drinking straws 2 are individually sealed in packages 9a which before reaching a cutting device 10 are still cohering in a continuous drinking straw strip 9. The packages 9a are already provided with adhesive points which are protectively covered by a cover strip 11. The drinking straw strip 9 is supplied by supply devices (not shown), it is pressed by a press-on roll 12 against the transfer drum 6 while the cover strip 11 is removed via a roll 13 which is driven in synchronism with the transfer drum 6 by the motor 7. The transfer drum 6 has assigned thereto a transfer finger 14 which is movable around a pivot arm 15 in the direction of the double-headed arrow and presses the packages 9a, which have been isolated by the cutting device 10, together with the drinking straw 2 onto the receiving surface 3a of the bags which have been supplied in a lying position on the conveyor 4, whereby the adhesive points can adhere.

The rotational axis 6a of the transfer drum 6 is inclined by an angle α relative to the conveying surface 4a. The angle α is smaller than 90° and preferably corresponds to the angle α under which the receiving surface 3a is inclined relative to the conveying surface 4a when the stand up bag 3 is transported in a lying position on the conveying surface 4a. Furthermore, said angle α corresponds to the angle enclosed by the receiving surface with the opposite surface of the bag 3 which rests on the conveying surface 4a. Since stand up bags which are filled with beverages cannot exactly keep their shape

because most of the time they consist of plastic films or laminated aluminum foils, angle α can also be determined as a mean value.

During operation the stand up bags 3 are supplied in a continuous row on the conveyor 4 to the transfer device 5, the transfer drum 6 is rotated in synchronism with the conveyor speed of the conveyor 4 about the axis 6a, the drinking straw strip 9 is fed continuously, the cover strip 11 is continuously removed, the individual packages 9a are cyclically isolated by the cutting device from the drinking straw strip 9 and cyclically pressed by the press-on finger 14 onto the receiving surface 3a of the stand up bags. For retaining the already isolated drinking straw packages 9a the transfer drum 6 can be designed as a suction drum. Two adjacent transfer drums can also be used that have a distance from each other which enables the finger 14 to operate between the drums so that an even better support of the isolated drinking straw packages 9 is achieved.

On account of the inclined position of the rotational axis 6a relative to the conveyor surface 4a, the drinking straw package 9a impinges on said receiving surface 3a exactly in parallel with said surface 3a, i.e. it need not carry out a displacing and tilting movement as has so far been necessary. The conveying movement can thereby be further accelerated.

In a modification of the described and illustrated embodiment, the apparatus according to the invention can also be used for applying drinking straws to stand up bags conveyed in an upright position; in this case, however, the angle of inclination must be adjusted to the larger acute angle which is enclosed by the receiving surface relative to the conveying surface and which is approximately 90° minus half the angle of enclosure between the receiving surface and the opposite surface on the stand up bag.

In a further modification of the described and illustrated embodiment, it is also possible to use other transfer means which are capable of applying drinking straws very rapidly. Furthermore, it is not absolutely necessary that all of the components of the devices are inclined. It is enough when the drinking straw has such an angle while being handed over.